

Amendments to the Claims

A detailed list of all claims under examination is set out below. Please amend claims 1-10, 12, 14 and 15, cancel claims 11 and 13 without prejudice and add new claims 21 and 22 as shown below:

1. (currently amended): An apparatus for reducing the liquid content of a material comprising a ~~particulate/liquid mixture of solid particles and liquid~~, the apparatus comprising:

containment means to contain the material, and

means to apply pressure to the contained material ~~therein~~, therein;

the containment means being partly defined by at least one first sheet member comprising a first filtration membrane permeable to the liquid but impermeable to at least some ~~and more preferably substantially all~~ of the solids solid particles contained within the material,

wherein the first filtration membrane comprises a woven textile ~~or other synthetic material~~ having at least one conductive element ~~in integral association with woven into~~ at least a part thereof ~~so as to constitute where so associated to form~~ a composite first electrode; and

the containment means being further partly defined by at least one second sheet member comprising a second filtration membrane permeable to the liquid but impermeable to at least some ~~and more preferably substantially all~~ of the solids solid particles contained within the material,

~~when wherein~~ wherein the second filtration membrane comprises a woven textile ~~or other synthetic material~~ having at least one conductive element ~~in integral association with woven into~~ at least a part thereof ~~so as to constitute where so associated to form~~ a composite second electrode;

wherein, in use, the first and second electrodes ~~being remotely are~~ spaced from each other and in contact with the material to allow application of a potential difference across the material;

wherein said at least one conductive element of the first and/or second filtration membrane comprises a plurality of conductive weft elements; and

wherein the first and/or second filtration membrane further comprises at least one conductive warp element, in electrical contact with the conductive weft elements of the respective first/second filtration membrane, but woven in such manner as to be partly exposed on the surface of the respective first/second filtration membrane.

2. (currently amended): An apparatus according to claim 1 wherein the means to apply pressure acts to urge ~~the~~ at least one first and at least one second sheet members ~~into closer association with~~ towards each other, reducing the distance between them so as to apply hydraulic pressure to the material to be dewatered.

3. (currently amended): An apparatus according to claim 1 configured as a belt filter press comprising at least two belts,

~~wherein at least one of the belts is a~~ first belt comprises said first filtration membrane and at least one ~~of the belts is a~~ second belt comprises said second filtration membrane in accordance with ~~any preceding claim integrally associated with a conductor so as to function respectively as a first/second electrode for at least a part of the length thereof.~~

4. (currently amended): An apparatus according to claim 3 configured such that the containment means defines a conduit with an input for material to be ~~dewatered;~~ dewatered ~~and~~ an output for dewatered material, the apparatus comprising a means to apply pressure ~~therealong, a along the conduit, at least one said~~ first belt member comprising a first filtration membrane substantially along the length thereof, ~~the filtration membrane being associated with a conductor for at least a part of the length thereof to form a first electrode, and a, and at least one said~~ second belt member spaced apart from the said at least one first belt member to retain material to be dewatered therebetween, ~~the belt member being associated with a conductor for at least a part of the length thereof to form a second electrode such as~~ and to allow an application application of a potential difference, in use, ~~across a~~ across the material to be dewatered within the conduit.

5. (currently amended): An apparatus according to claim 4 wherein the means to apply pressure along the conduit acts to urge the at least two belts towards each other to induce a hydraulic pressure in the material to be dewatered therebetween, and is so arranged that this pressure is increased as the material passes along the conduit.

6. (currently amended): An apparatus according to ~~claim 5~~ claim 3 wherein each belt is disposed as a continuous belt around a plurality of pressure rollers and/ or guide rollers, each roller being an insulator at least on a contact surface thereof.

7. (currently amended): An apparatus according to ~~claim 6~~ claim 3 wherein the edges of each belt are provided with an insulating surface coating to permit the edges of opposing belts to touch without creating a short circuit.

8. (currently amended): An apparatus according to ~~claim 7~~ claim 3 wherein the ~~belt is a first and second belts are woven belt, the conducting elements comprise an array of belts, said~~ conductive weft elements are disposed ~~generally~~ transversely to the respective belt, and ~~additional transfer elements are~~ wherein the or each conductive warp element is located ~~generally toward one of both edges of the~~ respective belt and ~~extending~~ extend longitudinally ~~therealong, incorporated into the warp so as to be in electrical contact with the weft elements, but woven in such manner as to be partly exposed on the surface of the belt along the~~ respective belt.

9. (currently amended): An apparatus according to claim 1 wherein the at least one said first and/or second filtration membrane is a respective woven sheet material having a primarily non-conductive polymeric base structure, ~~being woven, knitted, needle-punched, non-woven or otherwise fabricated, and including conducting elements within or on the sheet structure in~~ intimate association.

10. (currently amended): An apparatus according to claim 9 wherein the ~~econducting~~ conductive elements are elongate ~~econducting~~ conductive elements comprising thread, tape, or wire, ~~or the like~~

11. (cancelled).

12. (currently amended): An apparatus according to ~~claim 11~~ claim 1, wherein the ~~econducting~~ conductive elements ~~econstituting~~ comprised within at least one of the ~~electrode sheets~~ disposed as an anode in use first and/or second filtration membranes comprise metallic elements coated in mixed metal oxide.

13. (cancelled)

14. (currently amended): An apparatus according to ~~claim 13~~ claim 1 wherein the ~~filter membrane~~ at least one of the first and/or second filtration membranes comprises polymeric material loaded with carbon.

15. (currently amended): An apparatus according to claim 1, wherein ~~the filter membrane~~ at least one of the first and/or second filtration membranes comprises a plurality of discrete conductive regions.

16. (withdrawn): A method of removal of liquid from a material comprising a mixture of solid particles and liquid the method comprising the steps of:

containing the material within a containment means, which containment means is at least partially defined by at least one first sheet member comprising a first filtration membrane permeable to the liquid in the material but impermeable to at least some, and preferably substantially all, of the solid components of the sludge slurry or tailings, the filtration membrane comprising a filtration material having at least one conductive element in integral association with at least a part thereof to serve as a first electrode; and is further partly defined by at least one second sheet member comprising a second filtration membrane permeable to the liquid but impermeable to at least some and more preferably substantially all of the solids contained within the material when the filtration membrane comprises a textile or other synthetic material having at least one conductive element in integral association with at least a part thereof so as to constitute where so associated a second electrode;

applying pressure to the material to induce hydraulic drainage through the filtration membrane;

applying a potential difference between the first and second electrodes to induce electro-osmotic drainage through the filtration membrane.

17. (withdrawn): A method according to claim 16 wherein the potential difference is applied across a controlled area of the material only, by applying a power source to only a part of the conductive area or to one or a few of a plurality of discrete conductive zones on the filtration membranes.

18. (withdrawn): A method according to claim 17 comprising a continuous belt process, wherein the containment means is provided as a conduit with an input for material to be dewatered having full liquid content and an output for material to be dewatered where the liquid content has been reduced and a means to apply pressure there along;

The method comprising feeding material to be dewatered into the input, causing the material to travel therealong, applying pressure and potential difference thereacross to reduce the liquid content by simultaneous application of hydraulic and electro-osmotic drainage effects, and removing the sludge slurry or tailings at the output.

19. (withdrawn): A method according to claim 18 applied to the treatment of sludge, slurries, mineral wastes, slimes, muds, dredgings or tailings by dewatering.

20. (withdrawn): A method of modifying a conventional hydraulic pressure dewatering apparatus comprises incorporating a conductive filter membrane as an in situ, retrofitted modification

21. (new): An apparatus according to claim 7, wherein the insulating surface coating is hydrophobic.

22. (new): An apparatus according to claim 8, further comprising an electrical supply system comprising projecting brushes linked to a power supply and caused to contact at least one said conductive warp element of the first and/or second belt.